National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
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Year in Review

Take a look back at the memorable events of the past year at JSC. Photos on Page 3.

Speaking out

Local students win college money during NMA speech contest. Story on Page 4.

Space News Roundup

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Panel review finds space shuttle safe

The Aerospace Safety Advisory Panel concluded after a six-month review that efforts to streamline the Space Shuttle Program have not increased risks, the panel reported in December.

The review was requested on behalf of the President by the Office of Science and Technology Policy. The panel was tasked to review the issues associated with the safe operation and management of the space shuttle program arising from ongoing efforts to improve and streamline operations. These efforts include the transition to a comprehensive space flight operations contract, downsizing the shuttle workforce and reducing costs of operations and management. The study teams collected information through briefings, interviews, telephone conversations and from reviewing applicable documentation.

"I'm very pleased that the panel has given the Space Shuttle Program a clean bill of health," said NASA Administrator Daniel S. Goldin. "But the panel also pointed out some areas for continuing emphasis and the need to improve. NASA concurs with these findings and I have instructed the institutional management and the Space Shuttle Program to implement them as soon as possible. At NASA, safety is the bottom line. This report validates our actions and will guide us as we continue."

The panel's review included 22 recommendations, many of which address a need for NASA to take steps to ensure the availability of a skilled and experienced workforce in sufficient numbers to meet ongoing safety needs. The panel also noted that other activities occurring within the agency have the potential to generate safety problems. It cited specifically: a reduction-in-force during assembly of the International Space Station; and a concern that unrealistic funding levels and imposed schedules could place undue pressure on NASA and contractor management. The panel said that meeting the demands of these externally applied pressures can force decisions which increase risk.

An executive summary is available online at ftp://ftp.hq.nasa.gov/pub/pao/reports/asap_summary.txt

NASA Photo

The STS-81 crew takes a break from the Terminal Countdown Demonstration Test at Kennedy Space Center. The crew is schedule to liftoff from Launch Pad 39B Jan. 12 for the sixth shuttle/Mir docking. The *Atlantis* crew will pick up Cosmonaut Researcher John Blaha and leave Astronaut Jerry Linenger for a four-month stay on the Russian Mir Space Station. From left are, Commander Mike Baker, Mission Specialists Marsha Ivins, Jerry Linenger, John Grunsfeld and Jeff Wisoff and Pilot Brent Jett.

Managers meet Monday to set STS-80 launch

Following a reduced holiday work schedule, preparations of *Atlantis* at Launch Pad 39B are now returning to full strength aiming at a launch as early as Jan. 12 for STS-81, the fifth shuttle-Mir docking mission.

Atlantis' payload bay doors were shut for the final time prior to launch on Thursday, and shuttle managers will meet on Monday for a final flight readiness review, following which an official launch date will be announced. The crew of STS-81—Commander Mike Baker, Pilot Brent Jett, Mission Specialists John Grunsfeld, Marcia Ivins, Jeff Wisoff and Jerry Linenger—would travel to KSC at the end of next week for a Jan. 12 launch. The launch countdown will begin on Jan. 9. The launch window for *Atlantis* on Jan. 12 begins at 3:27 a.m. CST.

STS-81 ATLANTIS

The hatch actuators on *Atlantis* were removed and internal screws in the mechanisms were checked, replaced, tightened and locked with an adhesive following the hatch actuator failure on *Columbia* during STS-80. All of the hatch actuators had been reinstalled and retested aboard *Atlantis* by Christmas Eve.

Meanwhile, *Discovery* is being readied for the second flight of 1997, STS-82, to be launched around Feb. 13. STS-82 will be the second Hubble Space Telescope servicing mission. As work resumes on *Discovery* this week, upcoming milestones will include moving the spacecraft from the processing hangar to the Vehicle Assembly Bldg. to be mated with the STS-82 solid rockets and fuel tank on Jan. 10. *Discovery* is scheduled to be moved to Launch Pad 39A on Jan. 17.

Elsewhere, *Columbia* also resumes preparations this week for the third flight of 1997, STS-83, targeted for a March 27 launch. STS-83 will carry the Microgravity Science Laboratory-1 aloft for a 16-day stay in space. *Columbia* currently remains in KSC's Bay 1 shuttle processing hangar and stacking operations began just before Christmas on the STS-83 solid rockets in the VAB.

Mir crew celebrates Christmas in space

Cosmonaut Researcher John Blaha took time out during the holidays to send holiday greetings from the Russian Mir Space Station and talk with reporters about plans for the holidays.

"I certainly wish everybody on the planet a very merry Christmas, a happy New Year," Blaha said. "I would like to wish all of you peace and goodwill, to all of the creatures who are living on the planet, as well as tell everybody that our planet is a very special place in the cosmos and in the universe. From space, here on the Mir space station you really see it that way, and at Christmas time I would just like to remind everybody that all of those who have things need to share with those who don't, to make our planet a more special place.

"I would also like to say, as I give you this Christmas message, that of course the whole purpose of Christmas — and this is Christmas Eve right now on board the Mir space station in orbit — is to celebrate the birth of Jesus Christ and of course that happened approximately 1,996 years ago, so that's the purpose of Christmas."

MIR-22 BLAHA

Before the holidays, Blaha and his crew mates Mir 22 Commander Valery Korzun and Flight Engineer Alexander "Sasha" Kaleri talked with reporters about their holiday plans.

"Certainly we have a number of things we will do on Christmas," Blaha said. "I personally have a number of Christmas presents from people on the ground that came up on the Progress and I have one or two for Sasha and Valeri and we'll have a special meal that day. There will be a two-way video teleconference with my family on Christmas. Brenda will be there with my son Jim and my daughter-in-law and my grandson, and my daughter Caroline and my son Steven. I think my mother is going to be there as well. So we will have that, and it will be a nice and very exciting Christmas day, I think, for me."

"We're going to have an outstanding menu, a menu that will include both Russian and American products," Korzun said. "We will

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1996 seen as year of spectacular discoveries for NASA

A rock, a record, a rover and a new rocket were among the top NASA stories for 1996.

In an announcement that caused all humankind to take pause, NASA Administrator Daniel S. Goldin and a team of scientists revealed in August that a meteorite from Mars strongly suggested that primitive life may have existed on that planet more than 3 billion years ago. In a press conference at NASA Headquarters, a research team showed the world pictures of the first organic molecules thought to be of Martian origin; several features characteristic of biological activity, and possible microscopic fossils of primitive, bacteria-like organisms inside the ancient meteorite.

In vowing to pursue the investigation of this historic discovery, Goldin said "The evidence is exciting, even compelling, but not conclusive. It is a discovery that demands further scientific investigation. NASA is ready to assist the process of rigorous scientific investigation and lively scientific debate that will follow this discovery." Goldin invited governments from around the globe to participate in the continuing investigation of the meteorite.

Astronaut Shannon Lucid set a new record for an American living in space and broke the world's record for a woman living in space by spending 181 days aboard the Russian Mir Space Station. Lucid, who conducted microgravity and life sciences experiments aboard the Mir with two Russian cosmonauts, returned to Earth aboard *Atlantis* in November.

President Clinton presented Lucid with the Congressional Space Medal of Honor in an early December ceremony, citing Lucid "for her contributions to international cooperation in space … Shannon Lucid is an explorer in the best tradition of those who dare to challenge the unknown."

Lucid's stay on Mir was part of continuing U.S. - Russian space cooperation, which is setting the foundation for the International Space Station.

In a continuing effort to learn more about Mars, the U.S. launched two new spacecraft to the Red Planet in 1996. The Mars Global Surveyor and the Mars Pathfinder missions were both successfully launched from NASA's Kennedy Space Center.

Mars Global Surveyor, due to rendezvous with Mars in September 1997, will spend four months dipping into Mars' atmosphere using a technique called "aerobraking." Starting in 1998, the Surveyor will begin compiling a systematic database as it surveys the Martian landscape and photographs unique features, such as polar caps and Mars' network of sinuous, intertwining river channels.

Mars Pathfinder, set to land on Mars July 4, 1997, is designed to test the feasibility of a new low-cost method of delivering a spacecraft, science payload and free-ranging rover to the surface of the Red Planet. Once deployed, the lander will transmit back to Earth science data collected during descent through Mars' atmosphere. The rover, named Sojourner, will then activate an onboard camera and send back images to Earth, signifying the start of its exploration.

Mars was not the only planet to reveal startling new secrets in 1996. NASA's Galileo spacecraft, in its flyby and probe deploy at Jupiter, revealed many previously unknown facts about our Solar System's largest planet. Galileo's Probe, which was successfully sent into Jupiter's violent atmosphere in December 1995, provided new discoveries for NASA scientists. New information on the extent of water, clouds and the chemical composition of Jupiter's atmosphere was revealed.

As Galileo sped by Jupiter's moons, new details of the satellites began to emerge. On Ganymede, Jupiter's largest moon, scientists were intrigued by three-dimensional pictures of giant, icy fissures and evidence of a magnetic field. Galileo also reported that "warm ice" or even liquid water may have existed, and perhaps still exists, beneath the cracked icy crust of the moon Europa.

Galileo found that the volcanically-active moon Io had noticeably changed since it was last observed 17 years ago by the Voyager spacecraft. In November, Galileo flew by Jupiter's moon Callisto, investigating the strange, pockmarked fourth moon, so different from its other active siblings.

Living up to its role as one of the "great observatories," the Hubble Space Telescope

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